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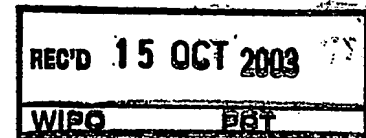
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10/526841 #2
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DEPARTMENT OF TRADE AND
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13/03/3763

the documents annexed hereto are true copies of:



Application forms P.1 and P.3, provisional specification and
drawings of South African Patent Application No. **2002/7183** as
originally filed in the Republic of South Africa on **6 September**
2002 in the name of **RICHARDS, PAUL ANTHONY** for an invention
entitled: "A FLUID PRESSURIZATION DEVICE".

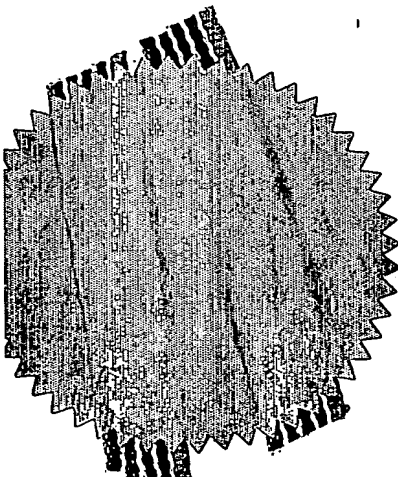
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3rd

dag van
day of **October 2003**


Registrateur van Patente



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REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
APPLICATION FOR A PATENT AND
ACKNOWLEDGEMENT OF RECEIPT
(Section 30(1) Regulation 22)

REPUBLIC OF SOUTH AFRICA
REVENUE
(to be lodged in duplicate)
FORM P.1
-6.9.02
R 060.00
A & A REF: V15380

THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT
ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE.

PATENT APPLICATION NO.	
21	01 2002 / 183
71	FULL NAME(S) OF APPLICANT(S)

RICHARDS, Paul, Anthony

ADDRESS(ES) OF APPLICANT(S)

Flat 3, 153 11th Street, Voëlklip, HERMANUS, 7200

54	TITLE OF INVENTION
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A FLUID PRESSURIZATION DEVICE

ONLY THE ITEMS MARKED WITH AN "X" IN THE BLOCKS BELOW ARE APPLICABLE.

<input type="checkbox"/>	THE APPLICATION CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2 The earliest priority claimed is Country: No: Date:
<input type="checkbox"/>	THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO. 21 01
<input type="checkbox"/>	THIS APPLICATION IS FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON APPLICATION NO. 21 01

THIS APPLICATION IS ACCOMPANIED BY:

<input checked="" type="checkbox"/>	A single copy of a provisional or two copies of a complete specification of 9 pages.
<input checked="" type="checkbox"/>	Drawings of 4 sheet(s).
<input type="checkbox"/>	Publication particulars and abstract (Form P.8 in duplicate) (for complete only).
<input type="checkbox"/>	A copy of Figure of the drawings (if any) for the abstract (for complete only).
<input type="checkbox"/>	An assignment of invention.
<input type="checkbox"/>	Certified priority document(s) (State quantity):
<input type="checkbox"/>	Translation of the priority document(s).
<input type="checkbox"/>	An assignment of priority rights.
<input type="checkbox"/>	A copy of Form P.2 and the specification of RSA Patent Application No. 21 01
<input checked="" type="checkbox"/>	A Form P.2 in duplicate.
<input checked="" type="checkbox"/>	A declaration and power of attorney on Form P.3.
<input type="checkbox"/>	Request for ante-dating on Form P.4.
<input type="checkbox"/>	Request for classification on Form P.9.
<input type="checkbox"/>	Request for delay of acceptance on Form P.4.

74	ADDRESS FOR SERVICE Adams & Adams, Pretoria
----	---

DATED THIS 5th DAY OF September 2002

P. PLAMPILLANS

ADAMS & ADAMS

APPLICANTS PATENT ATTORNEYS

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REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
DECLARATION AND POWER OF ATTORNEY
(Section 30 - Regulation 8, 22(i)(c) and 33)

PATENT APPLICATION NO			A&A Ref: V15380	LODGING DATE	
21	01	2002/7183		22	6 SEPTEMBER 2002

FULL NAME(S) OF APPLICANT(S)	
71	RICHARDS, Paul, Anthony

FULL NAME(S) OF INVENTOR(S)	
72	RICHARDS, Paul, Anthony

EARLIEST PRIORITY CLAIMED	COUNTRY	NUMBER	DATE
	33 NIL	31 NIL	32 NIL

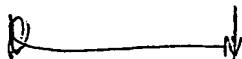
NOTE: The country must be indicated by its International Abbreviation - see schedule 4 of the Regulations

TITLE OF INVENTION	
54	A FLUID PRESSURIZATION DEVICE

* I/we Paul Anthony RICHARDS

hereby declare that :-

1. I/we am/are the applicant(s) mentioned above;
- ** 2. ~~I/we have been authorized by the applicant(s) to make this declaration and have knowledge of the facts herein stated in the capacity of~~ of the applicant(s);
- *** 3. the inventor(s) of the abovementioned invention is/are the person(s) named above and ~~the applicant(s) has/have acquired the right to apply by virtue of an assignment from the inventor(s);~~
4. to the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;
- **** 5. ~~this is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims; and~~
6. the partners and qualified staff of the firm of ADAMS & ADAMS, patent attorneys, are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address for service of the applicant(s) while the application is pending and after a patent has been granted on the application.

SIGNED THIS 2nd DAY OF SEPTEMBER 2002

Paul Anthony RICHARDS

- (no legalization necessary)
- * In the case of application in the name of a company, partnership or firm, give full names of signatory/signatories, delete paragraph 1, and enter capacity of each signatory in paragraph 2.
- ** If the applicant is a natural person, delete paragraph 2.
- *** If the right to apply is not by virtue of an assignment from the inventor(s), delete "an assignment from the inventor(s)" and give details of acquisition of right. ****
- For non-convention applications, delete paragraph 5.

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PRETORIA

FORM P.6

REPUBLIC OF SOUTH AFRICA
Patents Act, 1978

PROVISIONAL SPECIFICATION

(Section 30(1) - Regulation 27)

OFFICIAL APPLICATION NO.

21 01

LODGING DATE

22

6 September 2002

2002/7183

FULL NAME(S) OF APPLICANT(S)

71

RICHARDS, Paul, Anthony

FULL NAME(S) OF INVENTOR(S)

72

RICHARDS, Paul, Anthony

TITLE OF INVENTION

54

A FLUID PRESSURIZATION DEVICE

THIS INVENTION relates to a fluid pressurization device.

According to the invention there is provided a fluid pressurization device comprising:

a pressure container of fixed maximum volume;

a first resiliently deformable inflatable bladder that is disposed within the pressure container and that contains a fluid to be delivered under pressure;

a second resiliently deformable inflatable bladder that is disposed within the pressure container and that contains a fluid under higher pressure than that of the first bladder;

releaseable holding means for holding the second bladder at a fixed volume to thereby

hold the fluid contained therein under pressure, and for releasing the bladder thereby permitting the second bladder to expand and exert a force on the first bladder for pressurizing the fluid contained therein.

The first bladder may have a valve through which the pressurized fluid in the first bladder, may be discharged.

The fluid in the first bladder to be delivered under pressure, may be a volatile fluid, such as oxygen, and the fluid in the second bladder may be a non-volatile fluid such as air.

In a particular application, the fluid to be delivered under pressure, may be combined with a combustible fluid after delivery to produce a high temperature flame.

In one specific application, the high temperature flame may be used for deflagration of ordnance by applying said flame to the surface of an ordnance casing for softening the casing and igniting the explosive material contained therein.

In another specific application, the high temperature flame may be used for welding.

The pressure container may be in the form of a flexible bag of a fabric material.

The pressure container may be torus shaped.

Further features of the invention are described hereinafter by way of a non-limiting

example of the invention, with reference to and as illustrated in the accompanying diagrammatic drawings. In the drawings:

Figure 1 shows a schematic sectional side view of a fluid pressurization device, with releaseable holding means holding the second bladder under pressure;

Figure 2 shows a schematic sectional side view of the fluid pressurization device of Figure 1, with the releasable holding means released;

Figure 3 shows a fragmentary schematic perspective view of yet another embodiment of fluid pressurization device in accordance with the invention, with the holding means holding the second bladder under pressure;

Figure 4 shows a fragmentary schematic perspective view of the fluid pressurization device of Figure 3, with the holding means in a released state,

Figure 5 shows a fragmentary schematic sectional perspective view of a another embodiment of a fluid pressurization device in accordance with the invention;

Figure 6 shows a fragmentary schematic sectional plan view of the fluid pressurization device of Figure 5;

Figure 7 shows a schematic perspective view of a further embodiment of a fluid pressurization device for use in the deflagration of ordnance; and

Figure 8 shows a schematic perspective view of the fluid pressurization device of Figure 7.

With reference to the drawings, a fluid pressurization device in accordance with the invention is designated generally by reference numeral 10.

The fluid pressurization device 10 comprises, broadly, a pressure container 16; a first bladder 12; a second bladder 14 and releasable holding means 18.

The pressure container 16 is in the form of a flexible bag of stitched fabric. The bag is deformable but of fixed maximum volume. The container 16 contains the first bladder 12 and the second bladder 14.

The first bladder 12 is inflatable and is resiliently deformable. The bladder 12 contains oxygen to be delivered under pressure. The bladder 12 has an opening in which a valve 20 is located, through which pressurized oxygen can be discharged from the bladder and through which oxygen can be introduced into the bladder.

The second bladder 14 is inflatable and resiliently deformable and contains air held under higher pressure than the oxygen in the first bladder 12. The second bladder 14 is constructed to withstand gauge pressure to the order of seven atmospheres. The second bladder 14 has an opening in which a valve 22 is located, through which the second bladder 14 is filled with air.

The releasable holding means 18 is in the form of a scissor-like clamp 34. The clamp comprises two members 40 and 42 hingedly connected at a pivot point 44. Each member defines a recess 46 at the extent, in use, distant from the pressure container. A breakable tension bar 36 is received between the recesses 36, in use, holding the clamp in an open clamping position. In the clamped position (as can be seen in Figure 3), the clamp 34 holds the second bladder 14 at a fixed volume to thereby hold the fluid contained therein under pressure. Upon breaking of the tension bar 36 the holding clamp 34 is released (as can be seen in Figure 4) thereby permitting the second bladder 14 to expand and exert a force on the first bladder 12 for pressurizing the oxygen contained therein. Pressurized oxygen can then be delivered from valve 20.

With reference to Figures 5 and 6 of the drawings, another embodiment of the fluid pressurization device is designated by reference numeral 100. The pressurization device 100 is similar to the pressurization device 10, with the only difference being the different configuration of the holding means. In Figures 5 and 6 the same and/or similar reference numerals are used to describe features that are the same and/or similar to those illustrated in Figures 1 and 2 of the drawings of pressurization device 10.

The holding means is in the form of a holding line 300 passing through apertures 280 defined in the pressure container 160 to surround a section of pressure container 160 wherein the second bladder 140 is located. The holding line is kept taught by a tension bar 320 that is breakable. Upon breaking of the tension bar 320 the holding line 300 releases the second bladder 140 thereby permitting the second bladder 140 to expand and exert a force on the first bladder 120 for pressurizing the oxygen contained therein.

With reference to Figures 7 and 8 of the drawings; an ordnance deflagration device is designated generally by reference numeral 20. In Figures 7 and 8 the same and/or similar reference numerals are used to describe features that are the same and/or similar to those illustrated in Figures 1 and 2 of the drawings of the pressurization device 10.

An ordnance deflagration device 20 comprises, broadly, a pressure container 26; a first bladder 22; a second bladder 24, a gas fuel supply 50 and releasable holding means 28.

The pressure container 26 is in the form of a flexible torus-shaped bag of stitched fabric. The bag is deformable but of fixed maximum volume. The pressure container 16 contains the first bladder 22 and the second bladder 24.

The first bladder 22 is inflatable and is resiliently deformable. The bladder 22 contains oxygen to be delivered under pressure. The bladder 22 has an opening in which a valve 30 is located, through which pressurized oxygen can be discharged from the bladder and through which oxygen can be introduced into the bladder.

The second bladder 24 within the pressure container 26 is inflatable and resiliently deformable and contains air held under higher pressure than that of the first bladder 22. The second bladder 24 is constructed to withstand gauge pressure to the order of seven atmospheres. The second bladder 24 has an opening in which a valve 32 is

located , through which the second bladder 24 is pressurized.

Releasable holding means 28 (not completely visible in Figures 7 and 8) holds the second bladder 24 at a fixed volume to thereby hold the fluid contained therein under pressure(as can be seen in Figure 7). Breaking a trigger 46 releases the releasable holding means 28, causing the second bladder 24 to expand to exert a force on the first bladder 22 (as can be seen in Figure 8) for pressurizing the oxygen contained therein so as to allow the oxygen to be delivered at pressure via a feed pipe 30 to a nozzle 54.

Gas fuel such as butane is supplied to the nozzle 54 from a gas fuel container 50 via a feed pipe 48. Gas fuel and pressurized oxygen are mixed at the nozzle 54 to produce a high temperature flame (as can be seen in Figure 8) when ignited.

Heat from the burning gas fuel breaks the trigger 46 after a delayed period whereupon the holding device 28 releases the pressurized second bladder 24 to expand and apply pressure to the first bladder 22. The high temperature flame is directed at the ordnance 52 to cause deflagration thereof. Applying said flame to the surface of the ordnance 52 softens the casing and ignites the explosive material contained therein.

It will be appreciated that the exact shape and configuration of the fluid pressurization device may vary greatly while still incorporating the essential features of the fluid pressurization device as defined hereinabove. One variation may be the inclusion of a third resiliently deformable inflatable bladder that is disposed within the

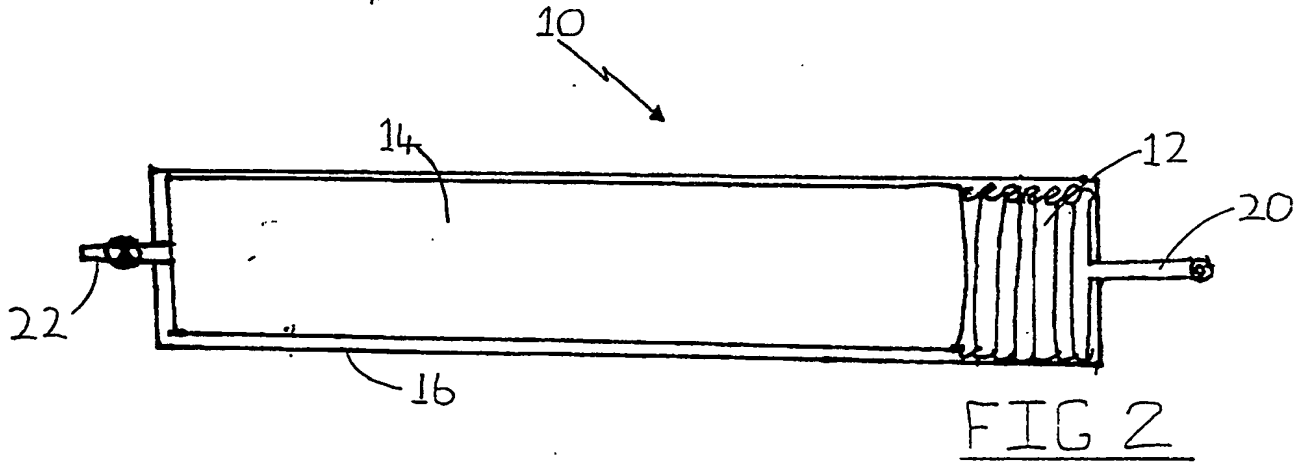
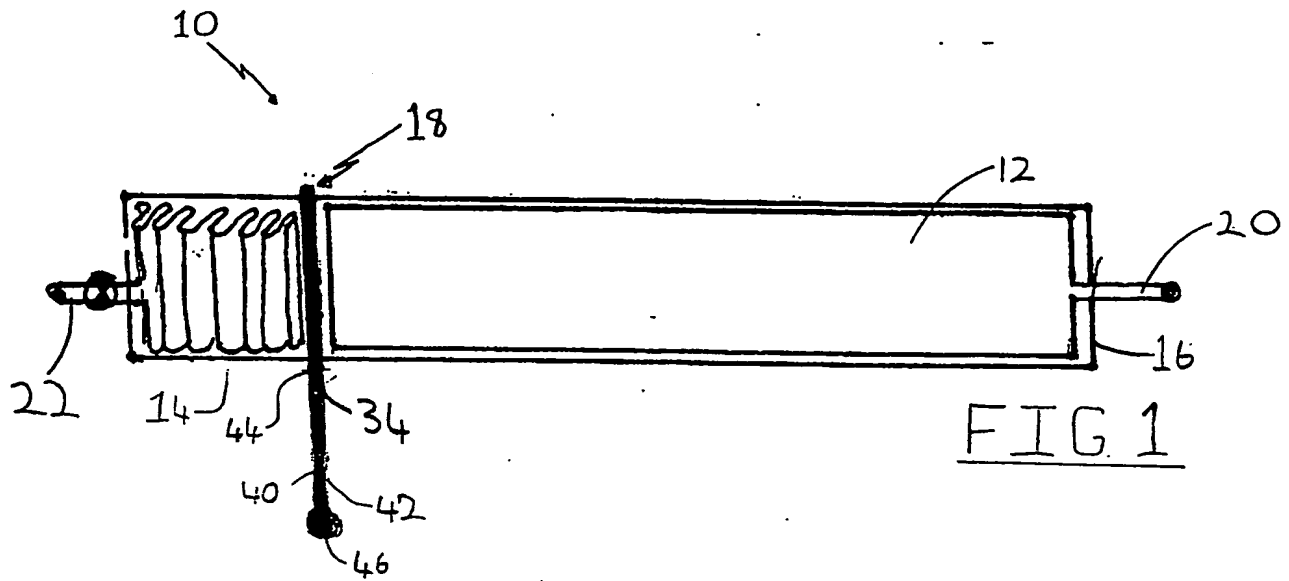
-9-

pressure container and that contains a combustible fluid such as butane, to be delivered under pressure for applications of the fluid pressurization device in the deflagration of ordnance.

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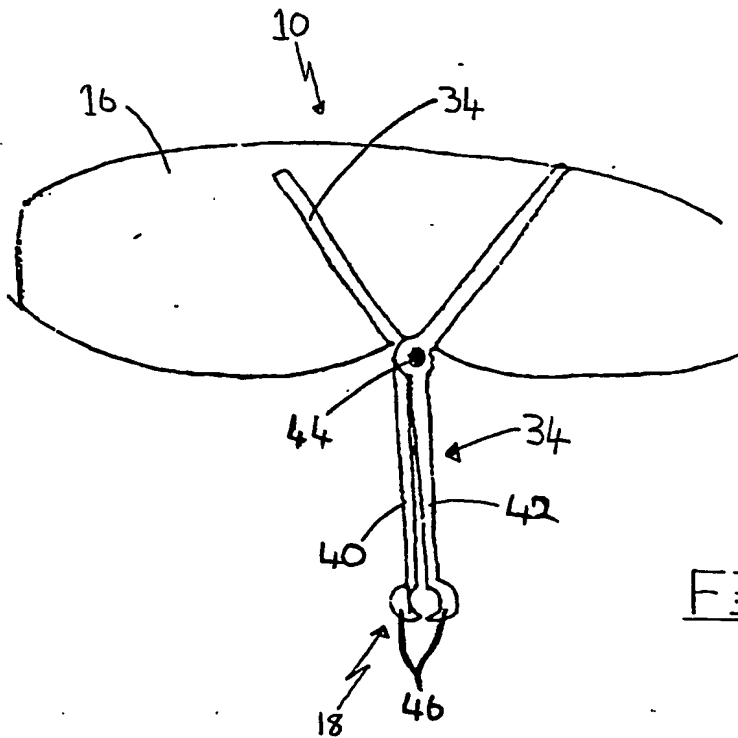
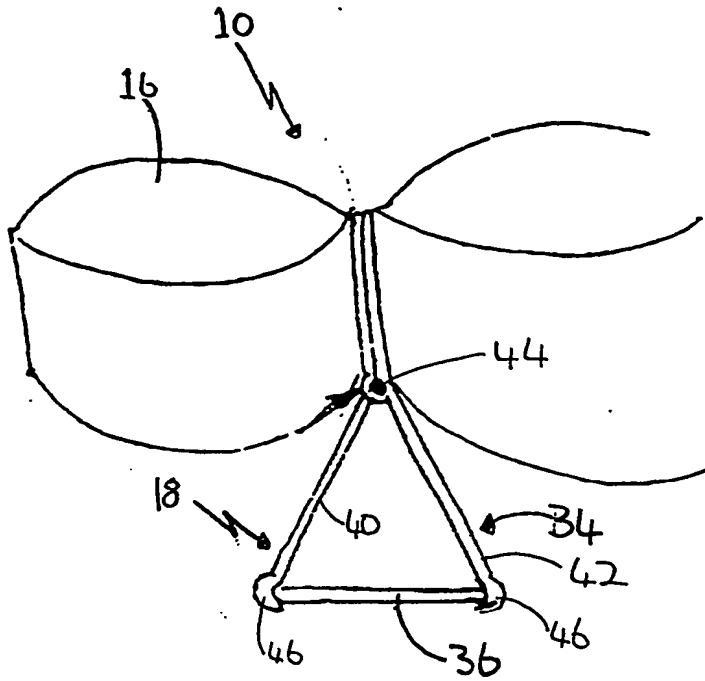


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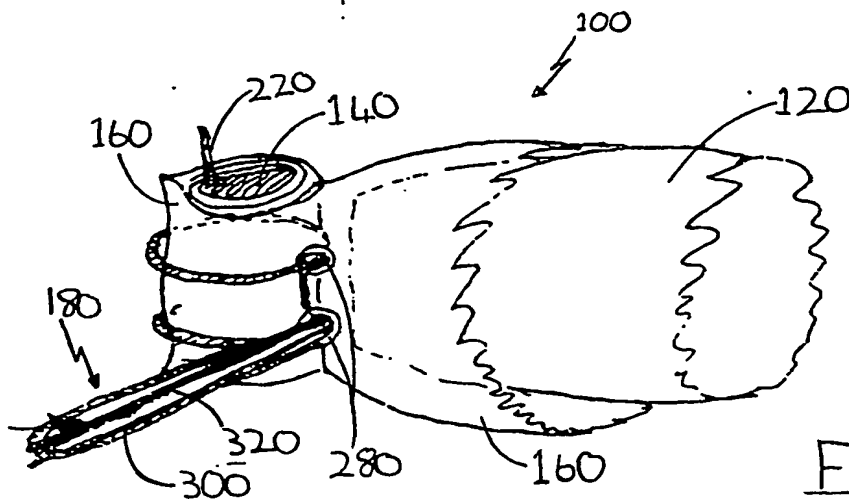


FIG. 5

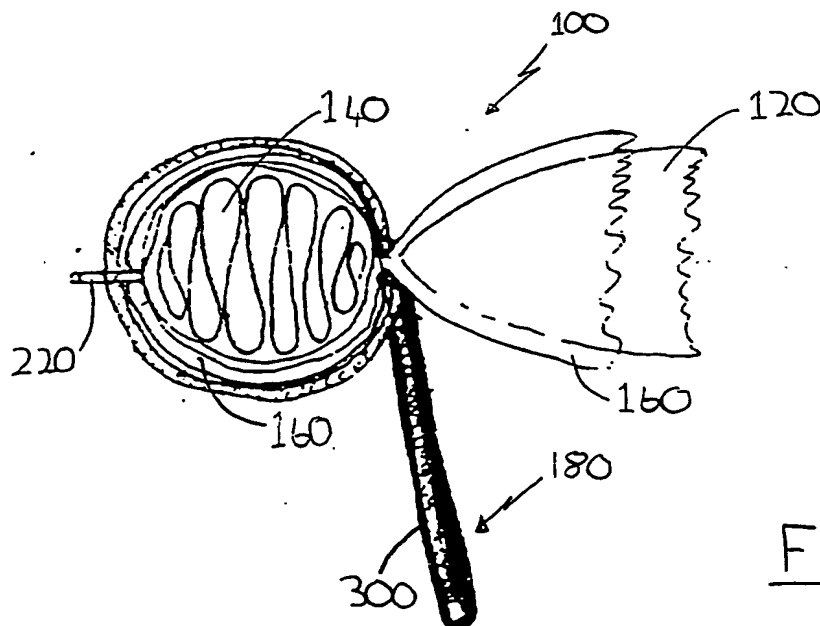
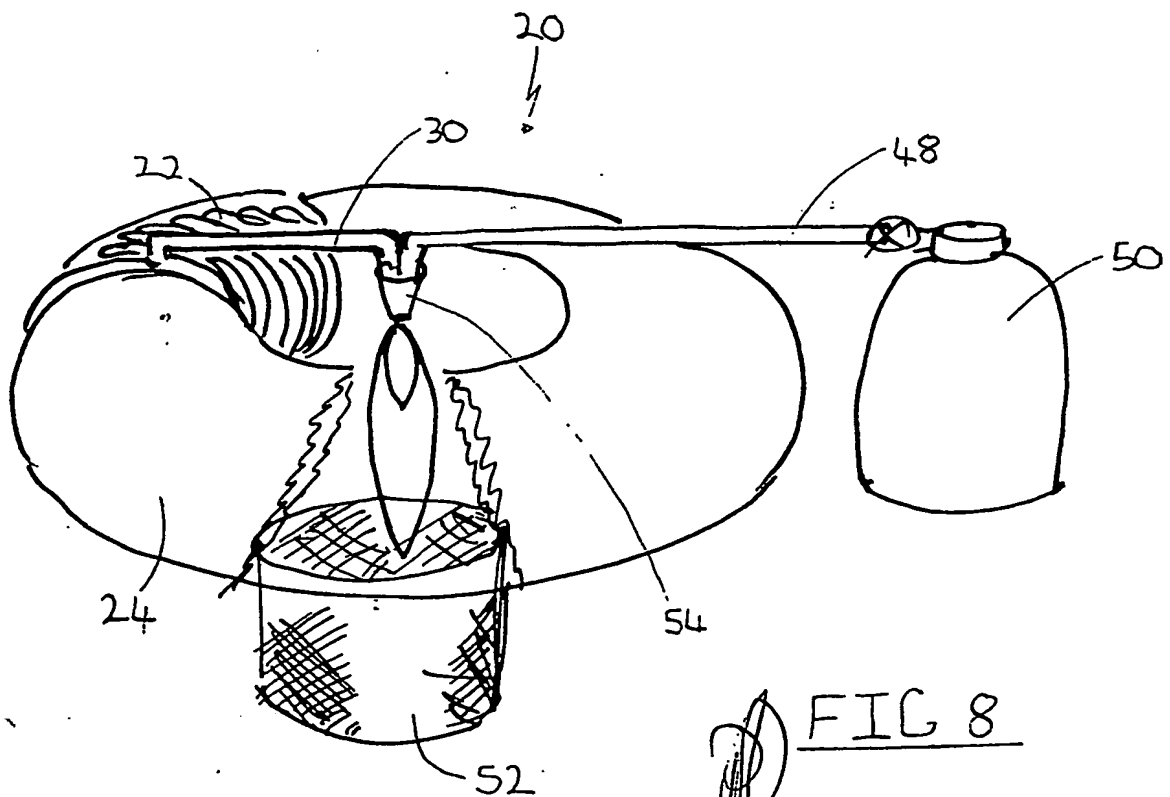
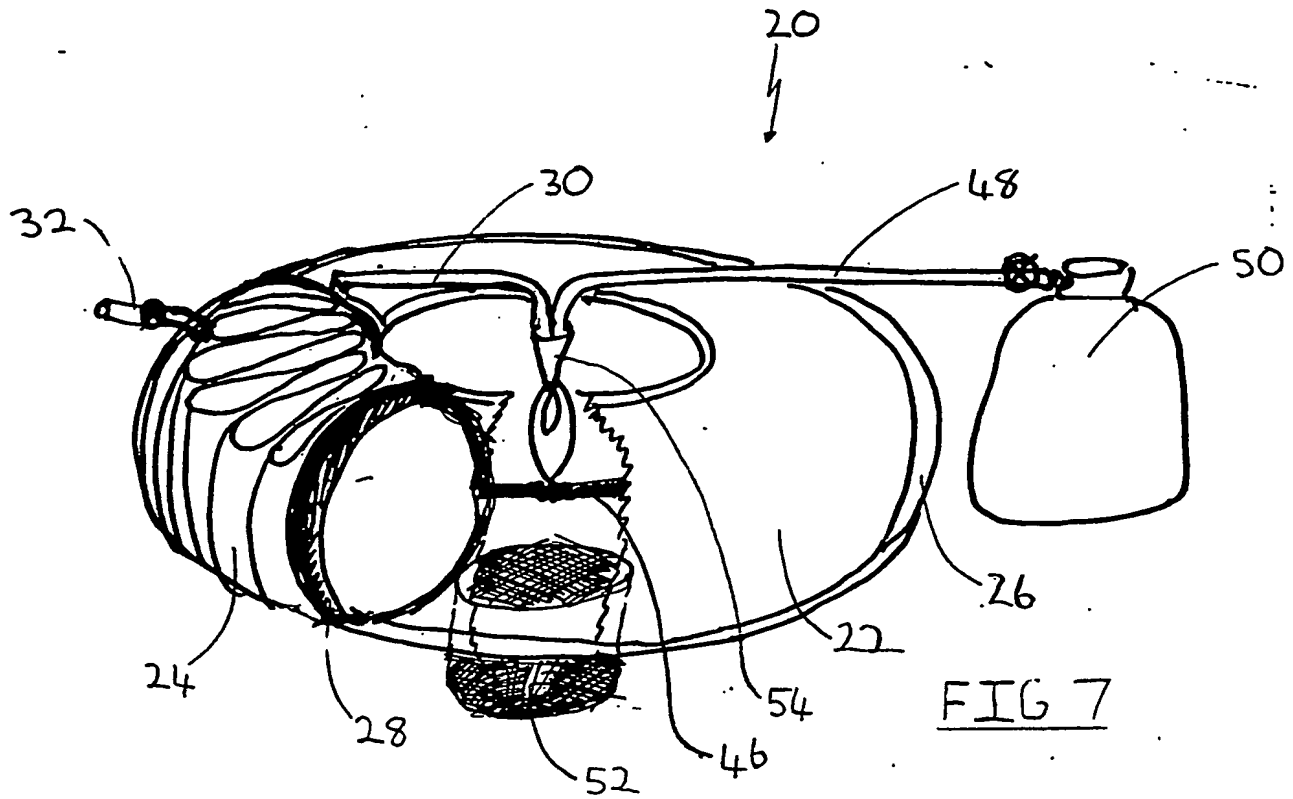


FIG. 6

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